IN THE CLAIMS

1. (currently amended) A method for diagnosis of male infertility, comprising:
(a) detecting in a sample obtained from a male patient, wherein said male patient is suspected of suffering from infertility and has two alleles of the *POLG* gene encoding the catalytic subunit of mitochondrial DNA polymerase, the presence or absence of at least one ~~mutation in the~~ trinucleotide (CAG) microsatellite repeat-length mutation in [[of]] one allele of the *POLG* gene and
(b) detecting the presence or absence of at least one pathological mutation in another allele of the *POLG* gene in said sample; wherein the presence of at least one mutation in both alleles of said *POLG* gene is indicative of male infertility.

2. (currently amended) A method of screening for genetic predisposition to male infertility, comprising:
(a) detecting in a sample obtained from a male patient, wherein said male patient is suspected of suffering from infertility and has two alleles of the *POLG* gene encoding the catalytic subunit of mitochondrial DNA polymerase, the presence or absence of at least one ~~mutation in the~~ trinucleotide (CAG) microsatellite repeat-length mutation in [[of]] one allele of the *POLG* gene and
(b) detecting the presence or absence of at least one pathological mutation in another allele of the *POLG* gene in said sample; wherein the presence of at least one mutation in both alleles of said *POLG* gene is indicative of genetic predisposition to male infertility.

3. (previously presented) A method of claim 1, wherein mutations are located in both alleles of the *POLG* gene in the trinucleotide (CAG) microsatellite repeat of the *POLG* gene.

4. (previously presented) A method of claim 2, wherein mutations are located in both alleles of the *POLG* gene in the trinucleotide (CAG) microsatellite repeat of the *POLG* gene.

5. (previously presented) A method of claim 1, wherein the at least one mutation in another allele of the *POLG* gene is located in or near a coding region of the *POLG* gene.

6. (previously presented) A method of claim 2, wherein the at least one mutation in another allele of the *POLG* gene is located in or near a coding region of the *POLG* gene.

7. (previously presented) A method of claim 1, wherein detection of at least one mutation is performed by a gene-technological method.

8. (previously presented) A method of claim 7, wherein the detection of at least one mutation is performed by a gene-technological method selected from the group consisting of the polymerase chain reaction (PCR) or other thermal cycler-based DNA synthetic techniques, molecular cloning in a plasmid or other suitable vector, detection of length variants in a DNA sample by agarose or polyacrylamide gel electrophoresis, gel or capillary electrophoresis and analysis of products tagged with a fluorescent or other label incorporated into the DNA, DNA sequence determination and any heteroduplex-based or similar methods for detecting base mismatches or length variants.

9. (previously presented) A method of claim 1, wherein the detection of at least one mutation is performed by an immunological method selected from the group consisting of Western analysis, immunohistology and immunoassay, for characterization of a mutant gene or gene product.

10. (previously presented) A method of claim 9, wherein the detection of at least one mutation is performed using immunohistology.

Claims 11-14 (canceled)

15. (previously presented) A method of claim 2, wherein detection of at least one mutation is performed by a gene-technological method.

16. (previously presented) A method of claim 15, wherein the detection of at least one mutation is performed by a gene-technological method selected from the group consisting of the polymerase chain reaction (PCR) or other thermal cycler-based DNA synthetic techniques, molecular cloning in a plasmid or other suitable vector, detection of length variants in a DNA sample by agarose or polyacrylamide gel electrophoresis, gel or capillary electrophoresis and analysis of products tagged with a fluorescent or other label incorporated into the DNA, DNA sequence determination and any heteroduplex-based or similar methods for detecting base mismatches or length variants.

17. (previously presented) A method of claim 2, wherein the detection of at least one mutation is performed by an immunological method selected from the group consisting of Western analysis, immunohistology and immunoassay, for characterization of a mutant gene or gene product.

18. (previously presented) A method of claim 17, wherein the detection of at least one mutation is performed by immunohistology.

19. (previously presented) A method of claim 1, wherein at least one mutation of the *POLG* gene is detected with polymerase chain reaction (PCR) or other thermal cycler-based DNA synthetic techniques.

20. (previously presented) A method of claim 2, wherein at least one mutation of the *POLG* gene is detected with polymerase chain reaction (PCR) or other thermal cycler-based DNA synthetic techniques.

21. (new) A method claim 1, wherein homozygous loss or compound heterozygous loss of wild-type *POLG* is detected by a gene-technological method.

22. (new) A method claim 2, wherein homozygous loss or compound heterozygous loss of wild-type *POLG* is detected by a gene-technological method.

23. (new) A method for diagnosis of male infertility using a sample obtained from a male patient, comprising (i) detecting homozygous loss of wild-type *POLG* which encodes the catalytic subunit of mitochondrial DNA polymerase, wherein both *POLG* mutant alleles comprise a length of CAG microsatellite repeat other than 10 repeats, or (ii) detecting compound heterozygous loss of wild-type *POLG*, wherein one *POLG* mutant allele comprises a length of CAG microsatellite repeat other than 10 repeats and another *POLG* mutant allele comprises at least one pathological mutation in its coding region, in said sample through a gene-technological method; wherein mutations in both *POLG* alleles is indicative of male infertility.

24. (new) A method of screening for genetic predisposition to male infertility using a sample obtained from a male patient, comprising (i) detecting homozygous loss of wild-type *POLG* which encodes the catalytic subunit of mitochondrial DNA polymerase, wherein both *POLG* mutant alleles comprise a length of CAG microsatellite repeat other than 10 repeats, or (ii) detecting compound heterozygous loss of wild-type *POLG*, wherein one *POLG* mutant allele comprises a length of CAG microsatellite repeat other than 10 repeats and another *POLG* mutant allele comprises at least one pathological mutation in its coding region, in said sample through a gene-technological method; wherein mutations in both *POLG* alleles is indicative of genetic predisposition to male infertility.